ATTACHMENT No. 1.

Amended Specification Pages 1, 2, 3, 8, and 9

LOW-CARBOHYDRATE SWEETENER

BACKGROUND OF THE INVENTION

This invention pertains to a low carbohydrate, low glycemic index cane sugar-free sweetener comprising Lo Han ((Quo)) - - Kuo-- Extract and Sucralose Liquid or Powder for use in an improved tasting ice cream, or as a sweetener for baked goods, candy, and beverages.

Prior art conventional ice creams are sweetened with about 7 to 29 wt % of natural sugars i.e. cane sugar . They also contain about 10 wt % or more of fats Further, the total carbohydrate content of conventional ice cream is in the range of about 19 to 34 wt. % . and they have a glycemic index of about 68, or more A standard portion of Conventional ice cream i.e. ½ cup or 65 grams, has a calorie content about 200 to 300. People suffering from diabetes or who have weight problems are advised by their medical doctors to avoid eating conventional ice cream because ofthe detrimental effect it may have on 1heir health.

Prior art ice cream formulations in which natural cane sugar is replaced by artificial sweeteners generally suffer from after taste problems including bitter nuances Further, they lack the clean taste, palatability, firmness, melting, and overrun properties of the subject invention comprising a unique mixture of ingredients including a synergistic combination of non-nutritive sweeteners

A sugar-less ice cream formula is described in U.S. Patent 4,675,200 While the ice cream product in said patent contains no sucrose, dextrose, fructose, or glucose, the sweetening .and texture forming agent comprises poryols There are no such materials in the cane sugar-free sweetener of the subject invention, U.S Patent

4,626,441 substitutes Aspartame (phenylketone) for conventional sweeteners, either alone or in admixture with a sweetener and a bulking agent. The unobvious and synergistic mixture of sweeteners present in the subject invention are not found in said references, nor in any other ice cream. Further, the improved taste and spoonability, along with low total carbohydrates per serving , are unique with the ice-cream of the subject invention.

BRIEF SUMMARY OF THE INVENTION

The subject sweetener comprising a synergistic mixture of Lo Han((Quo)) - - Kuo - - Extract and Sucralose Liquid is used to produce a unique low carbohydrate ice cream that is free from cane sugar. The Total Carbohydrate content of the ice cream is less than 16.1 wt. %, such as 13.6 wt.%, and the reduced calorie content is less than 1.8 calories per gram, such as 1.0 calorie per gram. The ice cream has an improved, clean, smooth taste and excellent spoonability. Softened ice cream product will become firm on being refrozen without the formation of ice crystals and without the loss of its excellent palatability and spoonability. A small synergistic amount of sweetener comprising about 0.014 to 0.018 wt % of Lo Man Kuo Extract and about 0.072 to 0.080 wt % of Sucralose Liquid is included in the ice cream. This amount converts to a weight ratio of Lo Han Kuo Extract / Sucralose Liquid in the range of about 0.19 to 0,23, such as about 021 Unexpectedly, a mixture of these two sweeteners in said weight ratio provides the ice cream product with an improved sweet, clean taste with no after taste. Small amounts of Glycerin (0.900 to 1.100 wt %) and CC305 (0.230 to 0.270 wt %) are included to emulsify and stabilize the product. Cream and skim milk are included to provide an overall butterfat content in the range of about 8.5 -9.5 wt, %. Further, there are no vegetable oils, natural cane sugar or sugar alcohol, which are ordinarily found in conventional ice cream, in the subject ice cream product.

In another embodiment, the same synergistic weight ratio of Lo Han ((Quo)) - - **Kuo** - - Extract / Sucralose Liquid as in the improved ice cream i.e. 0.21 is used as the

sweetening agent in the manufacture of baked goods i.e. cake, candy, and beverages.

In another embodiment, a powdered sweetener is produced comprising Lo Han ((Quo)) - - Kuo - - Extract and Sucralose Powder. In still another embodiment, this powdered sweetener is attenuated by mixing it with polydextrose powder..

It is therefore an object of the present invention to provide an improved cane sugar-free sweetener comprising a synergistic mixture of Lo Han Kuo Extract and Sucralose Liquid or Powder for use in a low carbohydrate ice cream, and in baked goods, candy, and beverages..

Yet another object of the present invention is to provide a natural sugar-free ice cream, which in comparison with conventional ice creams has improved taste, overrun properties, melting rate,firmness, palatability and spoonability.

DETAILED DESCRIPTION OF THE INVENTION An

improved liquid sweetener which comprises in weight percent:

Lo Han Kuo Extract	16.3 - 18.4, say about 17.4
Sucralose Liquid	83.7 - 81.6, say about 82.6

It was unexpectedly found that by the addition of a small amount of Lo Han Kuo Extract to Sucralose Liquid, the amount of Sucralose Liquid used to obtain the same sweetening effect of a tea spoon foil of natural cane sugar may be considerably reduced. For example, the amount of Sucralose Liquid in the cane sugar free ice-cream mixture to be further described below, may be reduced from about 0.15 grams /100 grams of ice cream product to 0.075 grams /100 grams of ice-cream product, by adding about 0.016 grams of Lo Han Kuo Extract. This is unexpected because Lo Han Kuo Extract is a less potent sweetener than Sucralose. Sucralose has a sweetening effect of about 600 times that of cane sugar, whereas Lo

Low microbial counts for the flavored ice-cream is shown in Table 1 below. Colony forming unit is designated by the term cfu, and standard plate count is represented by the term SPC.

Table 1

Microbial Counts for Flavored Ice Cream Coliform cfu/ml

Flavor	SPC cfii/ml	Yeast & Mold 3 day cfii/ml	
Vanilla	<1	no	<1
Chocolate	<1	70	</
Almond	<1	70	<l
Coffee	<1	100	<1

In another embodiment, the same synergistic weight ratio of Lo Han((Quo))- - Kuo - - Extract / Sucralose Liquid i.e. about 0.21 is used to replace the sweetening agent in the manufacture of baked goods i.e. cake, and candy and to sweeten beverages i.e. coffee, tea, and carbonated water.. In the manufacture of cane sugar-free baked goods i.e. cake and candy, the amount of Sucralose is thereby reduced while the taste is improved

In still another embodiment, the Sucralose liquid in the aforesaid formula, is replaced by Sucralose micronized powder, while maintaining the same Lo Han ((Quo)) - - Kuo - - to Sucralose ratio. Sucralose Powder comprises about 98 to 100, say about 99.9 wt % of Sucralose. In comparison, Sucralose liquid comprises about 24.5 to 25.6 wt % of Sucralose. The particle size of micronized Sucralose powder is such that 90% is less than 12 microns. It is produced by Me Neil. The low carbohydrate sweetener comprises in wt %, about 45.6 - 45.8, or 45.7 of powdered Lo Han ((Quo)) - - Kuo - - Extract and about 54.4 - 54.2, or 54 .3 of powdered Sucralose.. The wt ratio of Lo Han ((Quo)) - - Kuo - - Extract to Sucrolose in the product is in the range of about 0.81 to 0.84 .

The improved low carbohydrate unflavored cane sugar-free ice-cream made with the aforesaid all powder sweetener of Lo Han ((Quo)) - - Kuo - - Extract and Sucralose Powder (99.9 wt.% Sucralose) is shown in Example 2 below in wt %.

Example 2

Ingredients	Range	Best Mode
Lo Han Kuo Extract	0.014-0.018	0.016
Sucralose Powder	0.018-0,020	0.019
CC305	0.200-0.270	0.235
Glycerin	0.900-1.100	LOO
Porydextrose	9.059 –10. 110	9.582
Whey Protien Concentrate	1.550-1.620	1.585
Egg Yolk Solids	2.000-3.500	2.750
Non Fat Dry Milk Solids	2.800-3.20	3.00
Cream and Skim Milk	83.464-80,162	81.813

In still another embodiment, the aforesaid sweetener is attenuated by" mixing it with polydextrose e.g. Sta-Lite HI. The wt ratio of Lo Han ((Quo)) - - Kuo - - Extract to Sucralose in the product is about 0,84. This low carbohydrate weakened sweetener may be used to sweeten beverages e.g. coffee, tea, and carbonated water, as well as in the manufacture of baked goods e.g. cake and cookies, and candty. It comprises in wt%:

Ingredient	Range	Best Mode
Lo Han ((Quo)) - - Kuo - -	Extract 1 2.74 - 1.83	2 . 29
Sucralose Powder.	1 3 . 26 – 2 . 17 .	2 . 71
Porydextrose	1 94.00 - 96.00.	95.00